SANTA CRUZ BIOTECHNOLOGY, INC.

CHDH siRNA (m): sc-142323

BACKGROUND

Choline is an essential micronutrient that is one of the major sources of methyl groups in the human diet and is necessary for the structure and function of all cells. CHDH (choline dehydrogenase) is a 594 amino acid protein belonging to the GMC oxidoreductase family. This flavin adenine dinucleotide (FAD)-dependent enzyme converts choline to betaine aldehyde, which is then oxidized to betaine, one of the precursors of methionine. CHDH activity is highest in the kidney and liver and it is localized to the matrix side of the inner mitochondrial membrane. Since the gene encoding CHDH is regulated by estrogen, CHDH may be a possible marker for early stage ER-positive breast cancer due to its potential to predict anti-estrogen resistance. Polymorphisms in the gene encoding CHDH have been linked to the degree of susceptibility for choline deficiency.

REFERENCES

1. Zeisel, S.H. 2000. Choline: needed for normal development of memory. J. Am. Coll. Nutr. 19: 528S-531S.
2. Huang, S., et al. 2003. Functional expression and processing of rat choline dehydrogenase precursor. Biochem. Biophys. Res. Commun. 309: 344-350.
3. Kohlmeier, M., et al. 2005. Genetic variation of folate-mediated one-carbon transfer pathway predicts susceptibility to choline deficiency in humans. Proc. Natl. Acad. Sci. USA 102: 16025-16030.
4. da Costa, K.A., et al. 2006. Common genetic polymorphisms affect the human requirement for the nutrient choline. FASEB J. 20: 1336-1344.
5. Slow, S., et al. 2006. Liver choline dehydrogenase and kidney betaine-homocysteine methyltransferase expression are not affected by methionine or choline intake in growing rats. J. Nutr. 136: 2279-2283.
6. Wang, Z., et al. 2007. The prognostic biomarkers HOXB13, IL17BR, and CHDH are regulated by estrogen in breast cancer. Clin. Cancer Res. 13: 6327-6334.
7. Xu, X., et al. 2008. Choline metabolism and risk of breast cancer in a population-based study. FASEB J. 22: 2045-2052.

CHROMOSOMAL LOCATION

Genetic locus: Chdh (mouse) mapping to 14 B.

PRODUCT

CHDH siRNA (m) is a pool of 3 target-specific 19-25 nt siRNAs designed to knock down gene expression. Each vial contains 3.3 nmol of lyophilized siRNA, sufficient for a 10 µM solution once resuspended using protocol below. Suitable for 50-100 transfections. Also see CHDH shRNA Plasmid (m): sc-142323-SH and CHDH shRNA (m) Lentiviral Particles: sc-142323-V as alternate gene silencing products.

For independent verification of CHDH (m) gene silencing results, we also provide the individual siRNA duplex components. Each is available as 3.3 nmol of lyophilized siRNA. These include: sc-142323A, sc-142323B and sc-142323C.

RESEARCH USE

For research use only, not for use in diagnostic procedures.

STORAGE AND RESUSPENSION

Store lyophilized siRNA duplex at -20° C with desiccant. Stable for at least one year from the date of shipment. Once resuspended, store at -20° C, avoid contact with RNAses and repeated freeze thaw cycles.

Resuspend lyophilized siRNA duplex in 330 µl of the RNAse-free water provided. Resuspension of the siRNA duplex in 330 µl of RNAse-free water makes a 10 µM solution in a 10 µM Tris-HCl, pH 8.0, 20 mM NaCl, 1 mM EDTA buffered solution.

APPLICATIONS

CHDH siRNA (m) is recommended for the inhibition of CHDH expression in mouse cells.

SUPPORT REAGENTS

For optimal siRNA transfection efficiency, Santa Cruz Biotechnology's siRNA Transfection Reagent: sc-29528 (0.3 ml), siRNA Transfection Medium: sc-36868 (20 ml) and siRNA Dilution Buffer: sc-29527 (1.5 ml) are recommended. Control siRNAs or Fluorescein Conjugated Control siRNAs are available as 10 µM in 66 µl. Each contain a scrambled sequence that will not lead to the specific degradation of any known cellular mRNA. Fluorescein Conjugated Control siRNAs include: sc-36869, sc-44239, sc-44240 and sc-44241. Control siRNAs include: sc-37007, sc-44230, sc-44231, sc-44232, sc-44233, sc-44234, sc-44235, sc-44236, sc-44237 and sc-44238.

GENE EXPRESSION MONITORING

CHDH (C-5): sc-393885 is recommended as a control antibody for monitoring of CHDH gene expression knockdown by Western Blotting (starting dilution 1:200, dilution range 1:100-1:1000) or immunofluorescence (starting dilution 1:50, dilution range 1:50-1:500).

To ensure optimal results, the following support reagents are recommended: 1) Western Blotting: use m-IgGκ BP-HRP: sc-516102 or m-IgGκ BP-HRP (Cruz Marker): sc-516102-CM (dilution range: 1:1000-1:10000), Cruz Marker™ Molecular Weight Standards: sc-2035, UltraCruz® Blocking Reagent: sc-516214 and Western Blotting Luminol Reagent: sc-2048. 2) Immunofluorescence: use m-IgGκ BP-FITC: sc-516140 or m-IgGκ BP-PE: sc-516141 (dilution range: 1:50-1:200) with UltraCruz® Mounting Medium: sc-24941 or UltraCruz® Hard-set Mounting Medium: sc-359850.

RT-PCR REAGENTS

Semi-quantitative RT-PCR may be performed to monitor CHDH gene expression knockdown using RT-PCR Primer: CHDH (m)-PR: sc-142323-PR (20 µl). Annealing temperature for the primers should be 55-60° C and the extension temperature should be 68-72° C.

PROTOCOLS

See our web site at www.scbt.com for detailed protocols and support products.